DOCUMENT RESUME

ED 431 422 IR 057 384

AUTHOR Novitzki, James E.

TITLE The MIS Capstone: Development on an Integrating Group Applied Project Course.

PUB DATE 1998-12-00

NOTE 12p.; In: Proceedings of the International Academy for Information Management (IAIM) Annual Conference (13th, Helsinki, Finland, December 11-13, 1998); see IR 057 374.

PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS *Business Administration Education; Cooperative Learning; Curriculum Development; Graduate Study; *Group Activities; Higher Education; Information Technology; *Management Information Systems; Problem Solving; School Business Relationship; *Student Projects; Teamwork

IDENTIFIERS *Capstone Courses; *Course Development; Johns Hopkins University MD

ABSTRACT

This paper discusses the development of a MIS (Management Information Systems) capstone course in an adult graduate information technology program at Johns Hopkins University (Maryland). Rather than focusing on a technology topic, the course provides an environment that allows students to apply the information and skills that they have obtained in the program. Teams of students work with an organization and deal with actual IS (Information Systems) issues in a real world environment. Students start with a discussion of issues with their corporate sponsor and develop a scope statement to define the project. They finish by producing the deliverables specified in the scope statement and submitting a detailed written report. This paper describes desired outcomes, enabling tasks and objectives, the various elements of the course, the tasks required to ensure completion, grading, time requirements, and faculty issues. Initial results indicate significant improvement in student understanding of important IS issues, evaluation of the course, and student satisfaction. Appendices include: a list of sample projects; a project suggestion form; and a student skill, data, and project preference form. (Author/MES)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 431 422

The MIS Capstone: Development on an Integrating Group Applied Project Course

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL
HAS BEEN GRANTED BY

T. Case

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☐ This document has been reproduced as
received from the person or organization
originating it.
☐ Minor changes have been made to
improve reproduction quality.
• Points of view or opinions stated in this
document do not necessarily represent
official OERI position or policy.

By:

James E. Novitzki

IR 057 389

BEST COPY AVAILABLE

THE MIS CAPSTONE: DEVELOPMENT ON AN INTEGRATING GROUP APPLIED PROJECT COURSE

James E. Novitzki
Johns Hopkins University, SCS

This paper discusses the development of a MIS Capstone course in an adult graduate information technology program. Rather than focusing on a technology topic, the course provides an environment that allows students to apply the information and skills that they have obtained in the program. Teams of students work with an organization and deal with actual IS issues in a real world environment. Students start with a discussion of issues with their corporate sponsor and develop a scope statement to define the project. They finish by producing the deliverables specified in the scope statement and submitting a detailed written report. This paper describes the various elements of the course, the tasks required to ensure completion, time requirements, and faculty issues. Initial results indicate significant improvement in student understanding of important IS issues, evaluation of the course, and student satisfaction.

INTRODUCTION

The effectiveness of communicating global MIS and business concerns to technical students has on the whole been poor. A survey of academic journals and popular literature reveals numerous articles describing various education programs and their efforts to better prepare MIS students to function in the corporate business world after they graduate. The articles generally indicate that there is a problem accomplishing this at many schools. Student exit surveys indicate that many students, especially those changing careers, although technically competent, do not feel confident about their abilities to function in an IS role.

BACKGROUND

Chow and Edmundson (1994) discussed what IS employees lack from the employers' standpoint. Articles continue to mention shortcomings and limitations of graduates (Alexander, 1996, Coffee, 1998). In a recent issue of *Information Week* an article by Marianne McGee (1998) discussed the disconnect common in MIS programs between what industry wants and needs, and what is typically provided. The article notes the apparent inability of many MIS programs to produce graduates who are ready and able to meet the demands of dealing with a highly technical integrated infrastructure supporting multiple functional departments in organizations across our information society. This is not a new complaint. Buckingham (1987) discussed many of these same issues over a decade ago.

Interviews with local IS professionals and business executives confirmed many of the problems described above with their employees. They identified the same general skill sets beyond basic technical competency that Herman (1994) and others feel an effective MIS program must give its students. First, students must have skills necessary to function as part of a group. Second, students must have good oral and written communication skills. Third, they must have the ability to develop useful systems that provide functional managers the information that they need. It is obvious that one course can not cover all of these issues, but it can expose students to the environment and provide practice in developing these skills.

Course Development

The present paper only deals with one aspect of these issues, the preparation of students with experiences to aid in their success in the workforce. A survey of web sites of several MIS programs revealed that twenty-three of the thirty reviewed have some sort of capstone course/experience in their programs. The course was typically described as one that provides the student with a chance to integrate knowledge learned in a variety of courses across the curriculum. Fourteen of the twenty-three made use of an individual independent study project which might or might not involve working with a real organization. Several of the others were linked to some sort of case approach, and one had multiple teams work on a single project.

At our school, the MIS program had been taught for three years without anything resembling a real capstone course. Several different approaches were tried, but none seemed to really achieve what was wanted. In the spring of 1997 we finally were able to develop a course that accomplished what we wanted for our students. Using the ideas mentioned above and information contained in Quarstein et al (1994) and Richards and Pelley (1994), several points were identified during the course design phase and incorporated in the course description.

The new course would be an applied project class, so students could have the experience of working on an IS related undertaking with a real organization. Since it was based on an applied project, no specific technology topics or issues would be taught. It would also be a group activity. Most MIS projects are done in groups, and students must learn to effectively function in a group environment. Also, since almost all of our students are working with full time jobs, it ensures that the project can continue even if a team member is called out of town on business trips. Lastly, a group allows a larger scope project to be accomplished. The class projects are significant undertakings, which could not normally be accomplished by a single person in a one-semester time frame. No project for example is as simple as, 'design and implement a web page.' Appendix A is a listing of some completed projects.

The following description was developed based on these ideas.

> This course is intended as the culminating experience in the MIS program. As such, it is taken in the student's last semester. This course provides a guided experience, which which will help students to manage information or telecommunication system projects in the future. It provides students an opportunity to participate in actual technology projects within a real work environment with all its processes and challenges. Under the supervision of a faculty advisor, student teams develop a project proposal.
>
> Utilizing the skills and knowledge gained in the program, project teams then design, develop, and/or implement a telecommunications or information system solution for the organization.

Various desired outcomes were also identified. By the end of the course the students will be able to:

1. Demonstrate meeting and project management skills while meeting with technical and non-technical staff.
2. Determine the real underlying IS problems and/or needs of the organization.
3. Research the corporate sponsor's industry and demonstrate a working knowledge of the best business practices in this industry or business, particularly in the project's content area.
4. Analyze current business practices/processes within the corporate sponsor's organization.
5. Gather and analyze pertinent data about the project.
6. Document the approach and techniques used to solve the business problem.
7. Demonstrate use of good documentation standards to support research, findings, and analysis in the corporate and academic reports discussing the project.
8. Use electronic presentation methods to communicate project progress and obstacles.
9. Demonstrate appropriate team building skills to work cooperatively in assigned groups to complete the project.
10. Demonstrate analytical and problem solving skills in solving the business problem, addressing a changing business environment, and meeting the client's expectations.

A syllabus was developed that focused on these outcomes and identified several specific enabling tasks and objectives. Students will:

1. utilize systems analysis and design methodology,
2. apply content specific skills and knowledge learned in the MIS degree program,
3. quickly organize themselves to address the specific technology project proposed by the corporate sponsor,
4. quickly learn the industry to which they are assigned and the businesses processes involved,
5. identify and negotiate a scope of services statement,

6. apply a proven methodology to address the agreed upon business problem,

7. analyze and evaluate alternative solutions,

8. propose sound and reasonable, creative recommendations,

9. implement recommendations, if appropriate,

10. document business processes and customer requirements,

11. evaluate accomplishments of the project.

COURSE OPERATION

One section of the course is offered each term at each program center, and students register for this course as they would any other course in the program. Typically there are at least three sections taught each term. The only special characteristics of the course are that it must be the last course taken in the program, and that the enrollment cap is 24 students with a preferred class size of 20 or less. Students must petition if they wish to take another class the same term to complete their course of studies.

Prior to the term students take the course, Information Technology (IT) Department staff use a variety of means to contact organizations and companies in the local area about any IS type projects or tasks which these firms might have. Individuals and organizations also can contact the department with suggested capstone projects as well. See appendix B for the project request form. Before classes convene a list of participating organizations and companies with the expected projects is sent to all instructors.

On the first night of class, the list of participating organizations and companies with the types of projects available for the term is given to the students. The instructor discusses the various projects and the participating firms with the class. Students then are given time to discuss projects and possible teams. At the end of the evening, students select their top three choices for projects based on interest, experience, and skills.

The instructor then assigns students to projects, using their choices as a starting point. He/she must make sure that all projects get a balanced team to work on them, and that proper-sized teams (4-5 students) are formed. Team makeup is critical for project success. If the team is made up of individuals with a limited mix of skills, the process is often less successful than it could have been. Projects and companies often vary widely in their appeal; as a result there is usually at least one project chosen by few students, and one that is chosen by most students. Final team assignments are based on student skills and competencies as recorded on their Skill and Preference Form. (appendix C). As a result of all these constraints, only about 70% of students get their first or second choice for a project.

There is some flexibility about team assignments. If after initial team assignments have been made, a student wishes to be on a different team, they can switch if they can find someone to replace them on their original team. After the teams start working, students can be fired from a team, if the team feels that they aren't performing. Students also have the option to quit a team, if they feel the team isn't doing its job. In these cases students can try to get hired by another team, can attempt to complete a project on their own, or can take an incomplete grade and repeat the course the following term. This is obviously a serious problem, and if it occurs late in the term almost guarantees that the fired student will not complete the course that term. The faculty advisor and the course instructor both work with the team leader and team members to resolve such problems. As a result of these efforts, this has occurred only twice in eighteen classes with over 300 student enrollments.

After students have their final team assignments, they meet as a group with their faculty advisor and identify a team leader who serves as the team point of contact for both the corporate sponsor and the course instructor. One of the main purposes of this first meeting is to show students that while individually there may be some gaps in their technical knowledge or experience, as a group their knowledge and experience level is quite high.

Team members compose a list of questions that they want answered about the company, project, industry, etc. The team leader schedules a meeting with a representative from the company who becomes the team's corporate sponsor. The team meets at the company with the faculty advisor and the corporate sponsor. This can be an eye-opening experience for many students. The response to the questions developed by the team often shows that the sponsor does not have a firm understanding of the requirements, time required, and general work issues that are necessary to complete what they want. In spite of this confusion, during this first meeting with the sponsor, the team must find out as much as possible what the requirements and expectations for the project really are.

After the meeting with the sponsor, the team assembles again to develop an initial scope statement which outlines in some detail the work involved, timing, deliverables, etc. At this point many projects change focus from what was originally identified.

At the next course session, the class as a whole discusses each project, as defined by the scope statement and presented by team members. All class members discuss or question what should or could be done in each of the projects and help to refine the scope statement. There is also considerable collaboration between the groups. Class members from one team will often offer to assist other groups if a particular team has no one with required knowledge of some technology or application. As a result of this collaboration, the level of quality and detail in project deliverables is markedly improved. During these discussions, students also learn that many organizations have similar problems, that functional managers often have little knowledge about Information Technology, and that there is great benefit in working as teams in projects.

Each team then rewrites their scope statement based on input and recommendations from the class and meets again with their corporate sponsor to get it approved. This document becomes their contract with the corporate sponsor. If either the sponsor or the team wants to modify the project after it is signed, a new or modified scope statement must be prepared, and both groups must sign it.

After the scope statement has been approved, one of the first tasks the team must complete is to obtain in depth knowledge about the company, the industry, the type of technologies used, software and hardware used, and alternatives pursued by other companies. This research is partly accomplished through the writing of individual research papers. The instructor assigns each team member a specific topic to research, and they must complete this paper by the 8th week of the course. The purpose of the paper is two fold. First, it ensures that collectively the student teams have done sufficient research to know the industry, understand major issues and concerns to be able to provide a valid solution for the organization. Second, it provides a chance for the instructor to help hone the writing skills of individual students before they graduate.

Based on their meetings with the corporate sponsor, knowledge learned in the program, their own research, and the scope statement; the student teams then work with the corporate sponsor as required to complete the project in the fifteen week semester time frame. Their goal is to develop the best IS solution, given their knowledge of the organization and its problems.

The last night of class students make their presentations to corporate sponsor IS and management staff, IT faculty, the rest of the class, relatives, and interested guests. This presentation is expected to be highly professional, providing discussion of the problem, relevant research, alternative analysis, and a recommended solution.

Project teams also must prepare reports that discuss the entire project from problem statement to solution. One element of the report is a discussion of what went right or wrong in the project. Often the teams identify issues such as preconceived solutions or directed solutions on the part of the corporate sponsor as major problems. In some cases there is a difference between a best theoretical solution and one that would be accepted by the company. Some highlight great success stories. One sponsor wanted what they thought was a problem solved, and the students found a major underlying flaw in their systems which, when corrected, solved the perceived problem. In another case an organization had made a preliminary vendor selection for a project, but there had been no consideration of implementation and ongoing technology costs. The project team completed this analysis and a different vendor was selected.

GRADING

As with any course grading is an issue for students, and many graduate students do not like group projects. To minimize student issues and concerns about grading, several elements were included in the grading. First, there is the individual research paper worth 20% of the course grade. A person who writes a poor paper can receive a letter grade different than the rest of their team, if everything else is equal. Second, the course instructor, faculty advisors, and team members all evaluate individual team member performance. These evaluations account for another 20% of the course grade. They consider how the individuals perform with the group, which ones do the work, who does the best work, who is divisive, who doesn't show up, etc. As a result even though the overall project is group based, 40% of the grade is dependent on individual performance. This approach has eliminated most of the complaints that group grades are not fair.

The remaining 60% of the course grade are composed of group grades for the scope statement, an interim written report, an interim oral presentation, the final written report, and the final oral presentation. These deliverables are due at various times throughout the term, and this allows students to know how well they are doing as the

course progresses, which reduces the concern for a single grade at the end of the course.

Administrative Issues

This course is very labor intensive for the instructors. They need support from faculty advisors and corporate sponsors. Some of their main responsibilities are described below.

Course Instructor

- Facilitates the in class sessions, encourages interaction of teams and uses class resources to help project teams.
- Provides project management oversight direction and works with faculty advisors to ensure that all class projects progress.
- Works with corporate sponsors to ensure that required information is provided to teams in a timely manner.
- Identifies and assigns topics for the individual research papers.
- Acts as faculty advisor for at least one project.
- Rates performance of all teams and gives feedback for improved performance.
- Evaluates individual research papers, scope statements, interim and final reports.

Faculty Advisors

- Provide guidance to team members on (a) technical issues that arise in discussion with corporate sponsor and (b) process issues that arise during all phases of project design and implementation.
- Observes students in team meetings, records observations, and submits a final evaluation of team and individual contribution.
- Communicate with course instructor on any unusual challenges or project implementation issues or process problems with team members.
- Evaluate student projects from technical and process perspective.
- Meet with teams as appropriate, particularly during project scope of services development and the final meeting with the corporate sponsor, other times as requested by the team members.
- Attend interim and final team presentations and the formal presentation to the corporate sponsor.

Corporate Sponsors

- Appointed contact who acts as corporate project liaison for the team.
- Provide access to users and data the team needs to deliver services agreed upon in the scope of service statement.
- Be accessible to respond to team member questions and follow up communications in a timely manner.
- Attend final presentation.

Project Issues

At first it was difficult to develop the required number of appropriate projects. We use between 15 and 18 each term, so in a little over one year, we have completed 91 different projects. It is getting a little easier now. Some companies have heard about the projects and want to get involved. Many firms recognize the quality and amount of work done. As a result, we are starting to have requests for follow on projects, or in the case of some large companies, more than one project in a term.

A continuing problem is the need to screen the projects to determine their suitability. Some of the obvious constraints are that they can not be mission critical, time critical, involve extended time frames, involve travel to distant locations, or be merely an implementation of some technology at the technical level. Although the IT staff talk to the organizations on several occasions, there is always at least one surprise when the students arrive. Sometimes when the students meet with the corporate sponsor the project turns out to be too much, too little, too controlled, etc.

The workload varies between projects and there is usually no way to predict this completely in advance. All require significant amounts of work outside of class and meetings on site with the corporate sponsors. Typically a company who has sponsored a project before has a better feel for

what we can do and what they need to provide. As a result students may only need to meet with the sponsor on site three or four times during the term. For others it may require weekly meetings to make sure the team and sponsor keep in tune with what is going on. If there is some technical implementation required, it may take multiple meetings per week to resolve and complete the project.

While much work on the projects can be done using information available from library sources and the Internet, a key element in many projects is information about the company, its operations, goals, technologies, etc. Student and faculty advisors sign non-disclosure statements, and many companies are very forthright about providing company information. Others make students work in the dark, and then complain about the results. Some companies ignore project deadlines so students are in the 11th week or later still waiting for key pieces of information. This can be a company problem or a sponsor problem, and must be resolved quickly by the course instructor, if the project is to be successful. If a company comes back with a second project, these are not significant issues.

Course Evaluation

After the initial offerings of the course, student exit questionnaire comments were reviewed. It asked about their feelings concerning the need for the course, their level of knowledge of IS, the need for functional managers to have knowledge of IS, and finally the value of IS to organizations. The majority of student answers are more positive than previous classes that had not been involved with the capstone course. This seems to indicate that learning has occurred at several levels, even though those topics are not addressed directly in the course. At this time there had been no statistical analysis to determine if these differences are significant.

RESULTS

Students receive first hand knowledge of issues which face IS personnel in companies. Students have seen:

a. company politics, for example, 'look at this problem but pick Lotus notes';

b. changing directions, a new department head arrives and sees no need for project;

c. need for a scope statement, when the corporate sponsor quits for better job or is fired, and someone else takes over the project;

d. lack of support for IS in the organization

e. lack of knowledge of IS that leads sponsors to suggest projects that would take several man years to complete, just to name a few.

Students also learn that projects in large technical companies are often more constrained than projects in smaller or not technically based organizations. Many students who really wanted a project with a particular company because of their national presence found out the bureaucracy and politics made doing anything meaningful almost impossible. Other students working with smaller companies have worked with corporation CEOs, Chairmen of the Boards of Directors, CIOs, and have found that high level management interest does much to ease information gathering, meeting deadlines, and general project support.

So far this course format seems to be very successful. In the five terms that it has been offered students, organizations, and instructors have all voiced views that this is truly a unique and valuable experience. The net result is students now look forward to the experience and are calling a term or two in advance to find out what some of the projects might be.

CONCLUSIONS

It appears, that at least for our student population, the capstone group applied project course significantly improves the learning experience. At its completion, students feel that this is not a book exercise, and see that the real world is not as clean and neat as many texts say it is. Most realize the major role that functional managers must play in the development of new effective MIS solutions and the requirement for IS personnel work with them.

Many students dislike the course while it is being completed because of its extensive requirements, but after completing the course, students generally note it as one of the high points of the program. Although the course description says that students will not be learning anything about technology per se, all students agree that the course is a good learning experience. A large number discuss the technical information that they learned as well as the skills they learned to work effectively in an IS role. Most comment that one of the biggest benefits was exposing them to some common problems involved in working in IS.

An unexpected benefit of the class has been that it has provided an entrée for students into companies. Although our students are normally fully employed and not looking for jobs, some students have been offered jobs or consulting positions based on their work in these capstone courses.

The course is not a panacea. As developed, it works well with non-traditional working adults who are focused in their desires to receive a degree. While students completing a full time day program would have an easier time setting up meetings and going to the corporate sponsor site, their lack of current job experience might limit their flexibility and creativeness in dealing with the ambiguities associated with working in a consulting role. Also some undergraduate students might not have the focus to be willing to spend the hours necessary to complete a project that requires extensive time commitments over what was originally envisioned to bring about its successful completion. Finally, depending on the maturity level of team members, the faculty advisor work load and instructor workloads might be significantly increased to ensure that the final product does credit to the program and/or school reputation.

REFERENCES

Alexander, S. (1996). A Buyer's Market: Jobs Abound for IS Professionals with the Right Skills, *Computerworld*, January 8, 1996.

Buckingham, R.A., Hirschiem, R.A., Land, F.F. and Tully, C.J. (1987) *Information Systems Education: Recommendations and Implications*. Cambridge University Press, Cambridge.

Chow, J., Dick, G. and Edmundson, R. (1994) Industry Satisfaction with IS Graduates in the 1990s: An Empirical Study. *Proceedings of the Ninth Annual Conference of the International Academy of Information Management*. 153-174.

Coffee, P. Buying into E-Commerce, *PC Week*, February 2, 1998, 27-32.

Herman S.J. (1994) *Hiring Right*. Thousand Oaks: Sage Publications.

McGee, M.K. (1998). School Daze, *Information Week*. February 2, 1998,44-52.

Quarstein, V.A., Ramakrishna, H.V., and Vijayaraman, B.S. (1994). Meeting the IT Challenges of Business, *Information Systems Management*. v11 n2 62-70.

Richards, Martin and Pelley, Lee (1994), The Ten Most Valuable Components of Systems Education, *Information and Management*, 27, 59-68.

APPENDIX A

The projects completed include a wide range of tasks including:

1. Developing an IT plan for a non-profit organization addressing issues of email, Internet presence, staffing, training, and LAN development.
2. Development of a client server database for a police department. System was windows based on an Ethernet LAN with security at data element level
3. Develop plan for second-generation architecture for an ISP including network design, software, and server selection.
4. Plan and development of a corporate Intranet for a human resources department of a large national company. Included the design of dynamic web pages to ensure easy update of information.
5. Plan for initial move of small company into electronic commerce; include design of web pages, content selection, determination of commitment level, and evaluation competition moves in EC.
6. Work with a chamber of commerce to develop geographic information systems to address issues of growth and development in the county.
7. Develop an online notification for users of an electron commerce provider.
8. Analyze and recommend third generation database for an insurance company after reviewing need requirements and legacy systems.
9. Automate loan generation and administration process for an entrepreneurial fund.
10. Design and implement an online advising system for university program advisors.

11. Work with a medical Services Company to establish electronic communication systems for physicians.
12. Design and install a LAN for small non-profit org.
13. Assess value and make recommendation on vendor for implementation of an Internet banking option by a small financial org.
14. Identify and develop specific technology requirements and a recommended solution in designing the next generation insurance agency.
15. Design web site and plan to link LAN to Internet and develop security steps to protect the main system for a company.

APPENDIX B

These forms are on the web site, passed out to students in the capstone courses, and are available at all of the teaching centers.

Technology Capstone Suggestion Form

The IT Department is always looking for organizations to be used in its IT applied capstone project course. This course allows teams of students to work with an organization to investigate an IS issue or solve an IS problem. The major requirements are: 1) The company must be using technology in its operations and want to improve this operation. 2) The company must have a willingness to allow non-employees to look at various company operations and activities. A team of experienced students will devote approximately three months to these projects, which are the culminating experience of students in the Masters of Information and Telecommunications Systems.

If you have a project in mind for a future Technology Capstone, please fill out and submit the form below. The information provided will be followed up and explored for possible selection. Please fill out the form as completely as possible.

Potential Sponsor

Company Name:
Address:
Contact's Name:
Contact's Phone Number
Contact's email
Contact's Title:

Project Description:

Please give a brief description of the project you are proposing. The description should give a clear overview of the project with enough details to convey the main idea. Expected scope and time constraints should be included.

Submitter Information:
Please provide a means for contacting you about your suggestion.
Name:
Address:
Voice:
Email:

Return to Carol Keyser, JHU School of Continuing Studies, Business and Management Division, Information Technology Department, 201 North Charles St. Suite 200, Baltimore, MD 21201-3933. Voice (410-516-0778), fax(410-659-8440), email (ckeyser@jhu.edu).

APPENDIX C

Student Skill, Data and Project Preference form

1. Name:

2. Day Phone:( )

3. Evening Phone (Optional):

4. email:
5. fax#:
6. Academic Concentration:
7. Work Organization:

8. Relevant Experience:

Project Management:

Yes _____ No_____ Some_____None_____

System Development Life Cycle:

Planning_____Analysis _____ Design _____ Development _____
Implementation_____ Maintenance_____

9. Tools:

Project Management /scheduler:

Other:

Internet Experience: HTML___Front page___Search engines only___ No Experience__

10. What skill sets do you bring to the project?

_____

_____

11. What are your expectations for this course?

_____

_____

12. Project Preferences (Which Project interests you and why?) Give order of preferences and use the back of this page.

_____